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APPLICATION NO.	FILING DATE	FIRST NAME INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TSOY, ELENA

ART UNIT	PAPER NUMBER
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1762

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DATE MAILED: 04/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/882 351

Applicant(s)

JUNG WON-IL

Examiner

Elena Tsoy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 25 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 25, 2003 has been entered.

***Response to Amendment***

2. Amendment filed on February 25, 2003 has been entered. New claims 21 and 22 have been added. Claims 1-22 are pending in the application.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 2, 5-7, 10-13, 21** are rejected under 35 U.S.C. 102(b) as being anticipated by Rourke et al (US 4,720,910).

As to claims 1, 2, 5-7, 13, 21, Rourke et al disclose a method of preparing active cathode electrode material (See column 1, lines 7, 40-41) for a lithium secondary battery (See column 2, line 20) comprising: forming a dispersion of an insertion compound such as lithium complex metal oxide or V<sub>2</sub>O<sub>5</sub> (See column 2, lines 12-14), a conductive polymer material in a solution of

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a polymer in a volatile solvent, and evaporating the solvent using a spray dryer (See column 4, lines 4-6) forming a particle in which the lithium complex metal oxide is encapsulated as a core material in a polymeric shell containing the inorganic salt and conductive material (See column 1, lines 43-54). The conductive polymer material is polyethylene oxide containing an inorganic salt to render the polymer ionically conductive (See column 2, lines 33-36) or polyethylene oxide having an anionic covalently bonded to the polymer chain (See column 2, lines 27-29) and an electronically conductive filler such as carbon black (See column 2, lines 37-38).

As to claims 10, 11, the amount of coated conductive polymer ranges from 6-11 to 52-90 wt % based on the weight of the lithium metal oxide (See column 3, lines 14-31)

As to claim 12, a coating layer of the coated lithium complex metal oxide particle having diameter of 2 microns would clearly have thickness less than 1 micron since the particle is constructed from 70 wt % of the core and 18 wt % of the coating layer (See column 6, lines 36-45).

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 8, 9, 14, 16-20, 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rourke et al (US 4,720,910) in view of Takahashi et al (US 5,679,480).

Rourke et al, as applied above, fail to teach that the lithium complex metal oxide is lithium-containing manganese-based metal oxide such as  $\text{LiMn}_2\text{O}_4$ .

Takahashi et al teach that  $V_2O_5$  is functionally equivalent to  $LiMn_2O_4$  for the use as the cathode material (See column 5, lines 7-9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used  $LiMn_2O_4$  instead of  $V_2O_5$  in Rourke et al since Takahashi et al teach that  $V_2O_5$  is functionally equivalent to  $LiMn_2O_4$  for the use as a cathode material, and the selection of any of these known cathode materials in Rourke et al would be within the level of ordinary skill in the art.

7. **Claims 3, 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rourke et al (US 4,720,910) in view of Walker, Jr. et al (H1576).

Rourke et al, as applied above, fail to teach that the conductive polymer is polypyrrole, polyacetylene, polyalkylthiophene, polyaniline (emeraldine base)

Walker, Jr. et al teach that polyethylene oxide is functionally equivalent to polypyrrole, polyaniline, polyacetylene, or polyalkylthiophene for preparing a solid electrolyte (See column 4, lines 11-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polypyrrole, polyaniline, polyacetylene, or polyalkylthiophene for preparing a solid electrolyte instead of polyethylene oxide in Rourke et al since Walker, Jr. et al teach that polyethylene oxide is functionally equivalent to polypyrrole, polyaniline, polyacetylene, or polyalkylthiophene for preparing a solid electrolyte, and the selection of any of these known solid electrolyte polymer materials in Rourke et al would be within the level of ordinary skill in the art.

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8. **Claim 15** is rejected under 35 U.S.C. 103(a) as being unpatentable over Rourke et al (US 4,720,910) in view of Takahashi et al (US 5,679,480), as applied above, and further in view of Walker, Jr. et al (H1576).

Rourke et al in view of Takahashi et al, as applied above, fail to teach that the conductive polymer is polypyrrole, polyaniline, polyacetylene, polyalkylthiophene.

Walker, Jr. et al teach that polyethylene oxide is functionally equivalent to polypyrrole, polyaniline, polyacetylene, or polyalkylthiophene for preparing a solid electrolyte (See column 4, lines 11-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polypyrrole, polyaniline, polyacetylene, or polyalkylthiophene for preparing a solid electrolyte instead of polyethylene oxide in a method of Rourke et al in view of Takahashi et al since Walker, Jr. et al teach that polyethylene oxide is functionally equivalent to polypyrrole, polyaniline, polyacetylene, or polyalkylthiophene for preparing a solid electrolyte, and the selection of any of these known solid electrolyte polymer materials in Rourke et al in view of Takahashi et al would be within the level of ordinary skill in the art.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

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*Conclusion*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (703) 605-1171. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*Elena Tsoy*

Elena Tsoy  
Examiner  
Art Unit 1762

April 14, 2003